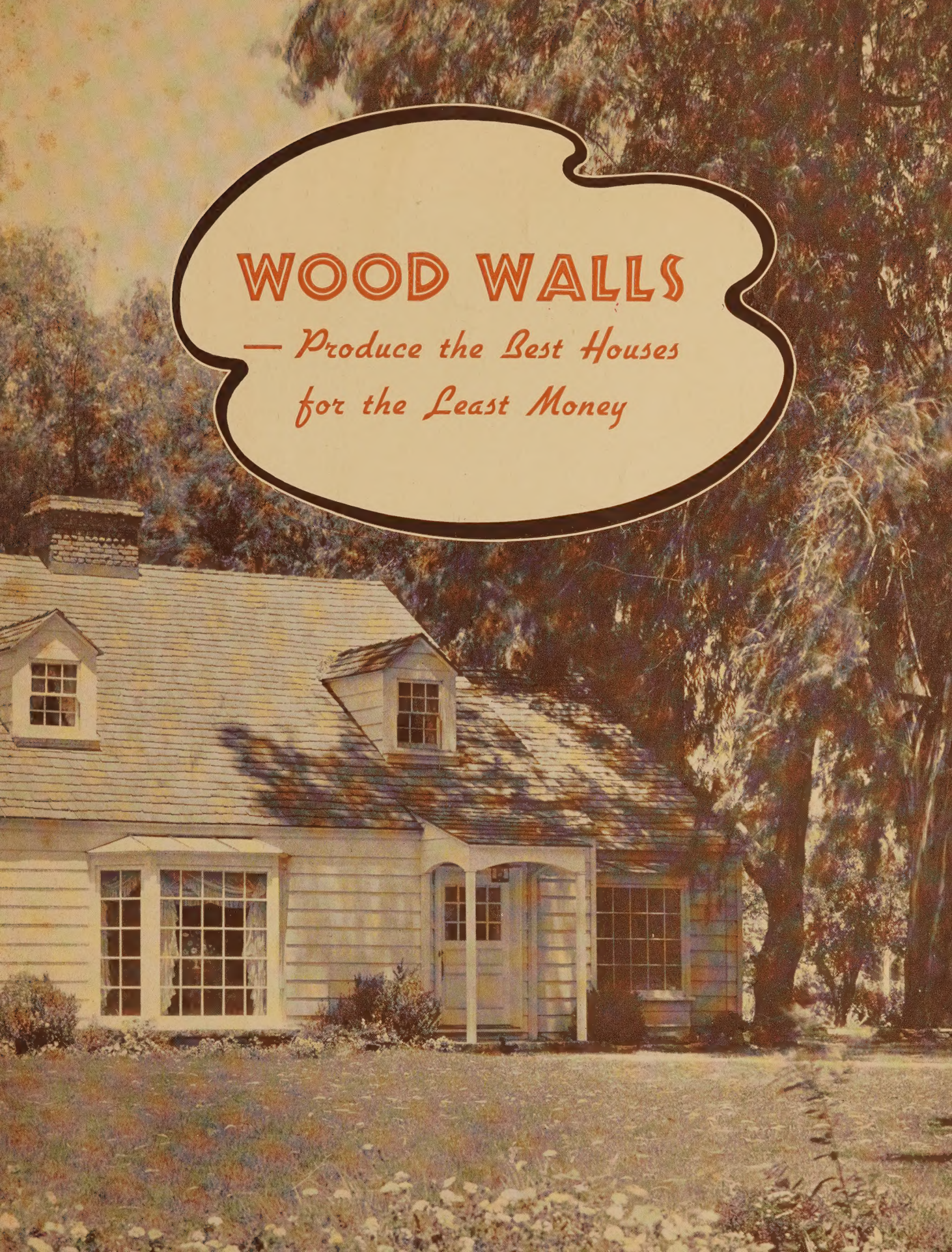
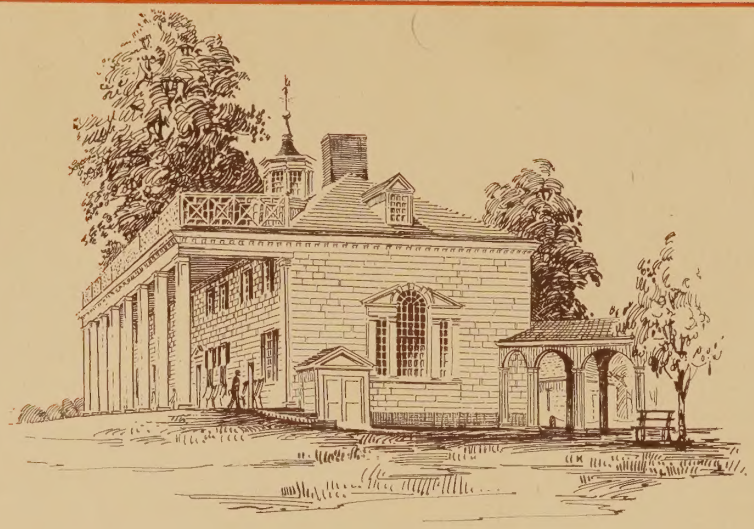


WOOD WALLS

— Produce the Best Houses for the Least Money



The One Home

EVERYONE KNOWS

★ ★ ★

Everyone knows Mount Vernon, but few can tell you quickly of what building material it is constructed.

Mount Vernon is protected by all-wood siding grooved to represent an ashlar pattern, and has been since Lawrence Washington first began work on the structure in 1743.

It is significant that America's best known and best loved private residence is of the material which has constructed four-fifths of all homes in the United States.

Wood sided homes have always given a distinctive beauty and charm to American communities. The earliest American homes, of which Mount Vernon is a good example, have proven so satisfactory during the years that America today, with the highest standard of living in the world, still prefers the tight, warm, good-looking wood frame house.

Designers today still turn to the early American wood house as a model for best contemporary homes. The architecture of other nations too is often best expressed in wood. It is hoped that this booklet will contribute to an appreciation of the possibilities of wood walls for all kinds of good modern homes.

ILLUSTRATIONS BY LAWRENCE STEVENS

America's Traditional Home Building Material Still Produces *America's Most Satisfactory Home*

★ ★ ★

The various types of American colonial architecture were but New World developments of the homes of contemporary England and Holland as the colonist-builders remembered them.

In historic times the houses of the English countryside were built exclusively of wood; stone and other masonry materials being used only when wood could not be found. During the 17th century the greatly increased naval construction took such a large part of the English forests that other materials became necessary for home construction in the mother country.

Colonists in America, however, found an abundance of wood and naturally resumed the preferred type of construction.

Probably the first permanent homes in New England after the log cabins were of the half-timbered, "black and white" type so common in England during the reigns of the Tudors and the Stuarts. Walls framed with rough timbers and stuffed with brick, stones, and coarse clay stiffened with straw in the time-honored English manner did not satisfactorily withstand the rigorous New England climate, so within a very few years, it became customary to cover the half-timbered walls with feather-edged plank or clapboards.

The clapboards were strips four inches wide and four feet long, one edge being thinner than the other so that when lapped over each other the boards would lie flat against the frame.

The new lumber-sided walls were so warm and so satisfactory that the practice of plugging or nogging between the timbers was soon abandoned. Later in the Georgian period of Colonial architecture it was not uncommon to cover brick walls with siding.

These timber-framed and clapboard-covered walls proved very pleasing architecturally and durable as the existence of many old ones today proves. However, material and labor were not always utilized with maximum efficiency in these early buildings . . . the transition to less wasteful methods and better results from less material has continued to our day and now less material builds a better house than ever before.

The wood frame house, when built today in accordance with modern engineering practices, provides beautiful walls which are warm, durable, and which cost the least of any good permanent construction.

Northern Colonial

Southern Colonial

French Provincial

English

Cape Cod

Georgian

Modern

Rustic

Lighter framing has replaced the heavy timbers of the Colonial days, but greater numbers of smaller members now produce walls of equal strength and stiffness at less cost. Two layers of wood with an interlining sheet of building paper have replaced the single clapboards and the space formerly occupied with the rubble of mud, stones, and brick is now available for a blanket of more scientific insulating material.

The exterior siding itself is available in numerous pleasing patterns and sizes, many of which are illustrated in this booklet. Modern siding comes to the builder thoroughly seasoned, carefully machined, and properly graded . . . advantages which the still sturdy old houses never enjoyed.

Wood siding has ever had the reputation for being a warm, friendly material, so naturally it lends itself best to the informal treatments which are so pleasing in the average sized home. It can give to the outside of a home the same air of genuine hospitality which the wood furniture, floors, and finish give to the inside. Architects appreciate and take advantage of this friendly quality of wood siding.

The beauty of wood siding is that of simple lines and solid colors. Small shadows created by the lapped or moulded edges of individual boards form a pattern of lines on the siding wall. The spacing and character of these lines, their

While most often thought of as the medium for the expression of American Colonial architecture, the wood wall in one of its numerous forms and adaptions may be used to express most satisfactorily any architectural theme or period.

The eight types of architecture illustrated at the left can all be perfectly executed with wood walls. An enlarged detail of the wall used in each case is given in latter pages of this booklet.

Convincing proof of the adequacy of wood construction and wood exteriors is the mellow old Fairbanks home at Dedham, Mass., which Johnathan Fairbanks built of wood in 1636. This is one of America's oldest homes and is still occupied by the descendants of the original builder.

An Enviable Service Record of Three Hundred Years Proves That the Warm, Dry Wood Wall Will Far Outlast the Requirements of Your Great-grandchildren.

direction, and the color the siding is painted or stained are all factors which influence the effect. These points should be considered in relation to the size and proportions of the wall areas when deciding upon the pattern and width of the siding to be used. For example, very narrow siding loses much of its pleasing effect when applied to a large blank wall, just as individual bricks on the side of an office building lose their identity.

The variety of architectural effects to be secured with wood siding is almost as broad as the wishes and originality of the architect or home builder. It is true that bevel, or lap siding as it is often called, is characteristic of New England Colonial and Dutch Colonial homes, but the use of some form of wood siding, sometimes in combination with other siding materials, gives pleasing effects on homes showing the influence of many other types of architecture.

That illusive but important factor in achieving enduring beauty in home architecture, "wall texture," can be accomplished with appropriate effect on all types of homes with the varied patterns and methods of application available in wood siding.

The narrow bevel siding and drop siding so much used in the past are still common, but wide bevel siding, various types of rustic sidings, and several kinds of vertical wood siding are also popular. This wide variety of patterns and sizes in which siding is available helps the home designer to achieve original effects and makes it easy to avoid monotony in wood sided walls, even where extreme simplicity is desired.

The height of a home may be emphasized by covering a part of the walls with wide vertical boards, perhaps using battens over the joints. Vertical corner boards break the horizontal lines of the siding and make the wall seem narrower, particularly if the corner boards and other trim are painted with a sharply contrasting color. A rustic appearance is easily obtained by turning the sawn side of wide bevel siding to the weather, or by using special patterns of rustic siding. Various types of siding may often be combined with shingles, or shakes, or rough stonework to give interesting effects. In this booklet are illustrated some of these unusual treatments, as well as the common types of wood siding.

Appearance is one of the most important factors to consider in the selection of materials for the walls of homes, but durability, warmth, and reasonable cost should also be required.

The enduring qualities of homes built of wood are well illustrated by the many old Colonial homes which are still common in New England and the Middle Atlantic States. Some of these houses are as much as 250 years old, and still in good condition. Modern methods of lumbering and reforestation assure an adequate supply of the best siding woods; woods which are fully as resistant to decay and weathering as was the lumber used for clapboards on the oldest American homes. Reasonable attention to proper construction and to painting will insure wood sided walls which will retain their beauty and strength for many generations.

The rapidity with which improvements are made in the construction of American homes, particularly the interior conveniences, often renders old homes obsolete long before their structural strength has been impaired. For this reason it is important that materials used in home construction not only be durable but in addition be flexible enough so that changes and improvements can be made conveniently and economically.

A large modern wood home expressive of a period theme . . . the classic Southern Colonial. This home was constructed during the summer of 1936 for display at the Great Lakes Exposition in Cleveland, Ohio. It is a good example of the best in design and construction in good wood homes. John Sherwood Kelley, Architect.

The ease with which wood sided walls can be altered or added to is well known. Spaces in frame walls are conveniently and readily accessible for changes in electric light wiring, plumbing and heating systems, telephone and radio wiring, and other accessories of modern homes. Homes, if they are fully to serve their purpose, should be kept as modern as the people who live in them, and walls of frame construction simplify the undertaking considerably.

The excellent insulating qualities of lumber constructed walls, together with their air-tightness, make wood sided homes one of the most economical types to heat. This not only reduces the cost of heating plant installations and fuel to run them, but also means that wood sided walls need no special precautions against dampness as do walls of some other materials.

First cost of wall materials is important but it should be considered only in connection with their beauty, warmth, durability, and cost of maintenance. No material should be selected merely because its first cost is low unless it will make a home which is economical to heat and maintain. Authoritative tests have shown that frame walls with wood siding are, when first cost of walls and radiation, and the annual cost of heating and maintenance are considered, the most economical type of walls. This advantage is maintained when special insulating materials are added to wood sided and other walls. (See page 23.)

Wood sided houses, simple, straightforward in execution, well proportioned, first developed in Colonial days represented good taste in architecture; have survived the test of public opinion and are the symbol of the best in home architecture today.

At some period in their development most all nations have used wood for their residential construction, reverting to other types only upon depletion of forest reserves, with the result that there is precedent in wood for practically every existing architectural type.

While most often thought of in America as the means for the expression of the "American Colonial," an English, French, or most any other architectural variation is equally at home with the wood wall.

This is the stately Georgian home in wood which General Jonathan Moulton, an Indian fighter and close personal friend of General George Washington, built near Portsmouth, N. H., in 1769. In style and preservation this appears to be almost modern. It is a large house well executed in wood.

The quaint cottages of the Cape Cod region are at home in no other material than wood, the stately Southern Mansion looks best and most authentic when reproduced in the material of its originals. The Georgian home, formal and austere, requires the finesse of detail which only flexible wood construction can impart. The early Dutch home of the Hudson Valley and Long Island is too intimate for execution in hard, cold materials which detract from its cozy charm. The English house, with its background of exposed timber work, requires wood for any reproduction which plans to be even "near" authentic. The Rustic, lodge or cottage type of home had its first conception in the primitive log dwelling, and to look the part of this early type, must be built of wood.

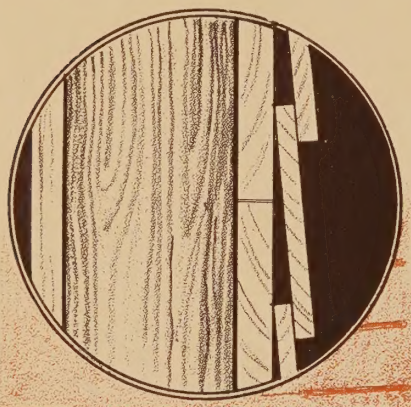
The so-called "modern" type of home has no period precedents, but seeks the creation of a simple, functional type of residential architecture, entirely new in form and independent of all conventions. As a material for the execution of this type of building, wood, especially in some of its newest manufactured forms, has no peer.

Siding may be machined for flush joints or plywood may be used to produce the perfectly flat areas frequently required by modern designers. Plywood also lends itself well to the curved segments and sections frequently called for in this type of design. All in all, wood in one of its many forms is the least expensive, most workable material from which to erect a house employing modern principles.

Here is another exhibit house, which in contrast with the Colonial home on the opposite page, forcefully illustrates the versatility of wood in the expression of any architectural theme. This home, built by the wood industries at "A Century of Progress" exposition in Chicago is "ultra" modern in every respect, in good taste, with no suggestion of being grotesque. Ernest Grunsfeld, Architect.

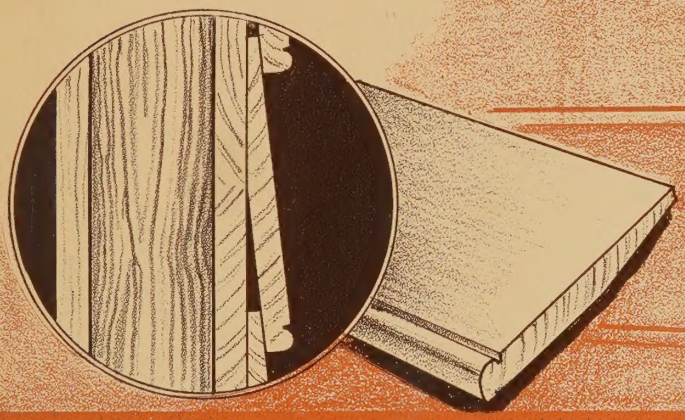
Ask your architect to design your new home in wood - - You will pay less, your home will be warmer, and you may still have any type of home you choose.

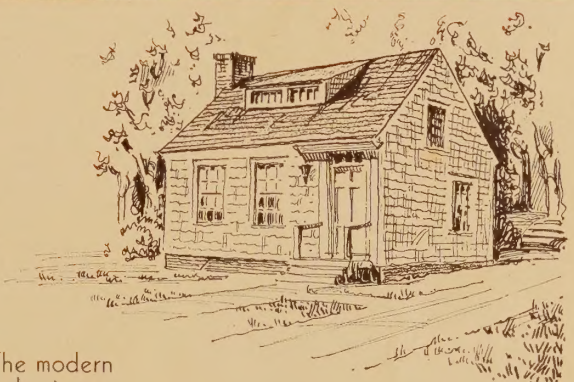
The earliest American homes were simple replacements of contemporary half-timbered European houses . . . substituting on the exterior a new, warm, weather-tight covering . . . wood siding.



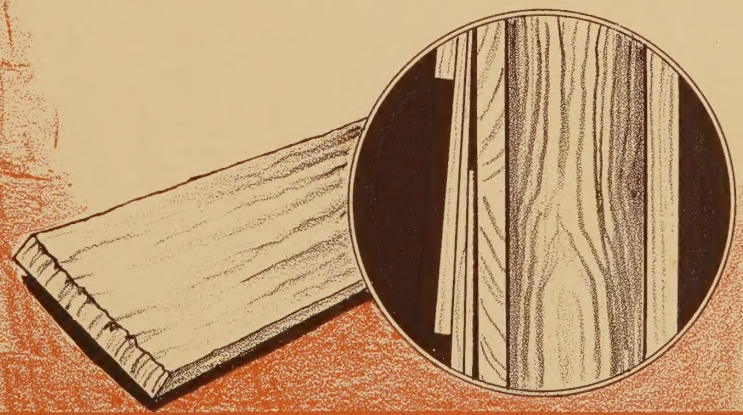
Clapboards came into use very early in our Colonial period. They were usually three to four feet long and tapered to fit against the wall . . . original clapboards of this period still cover many old New England houses.

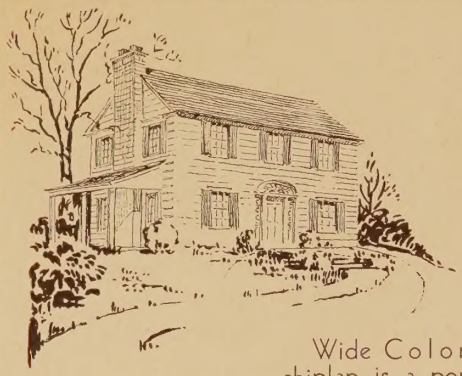
Using hand tools, colonial carpenters frequently beaded their bevel siding, adding greatly to the softness and refinement of the shadow lines in the wood sided wall.



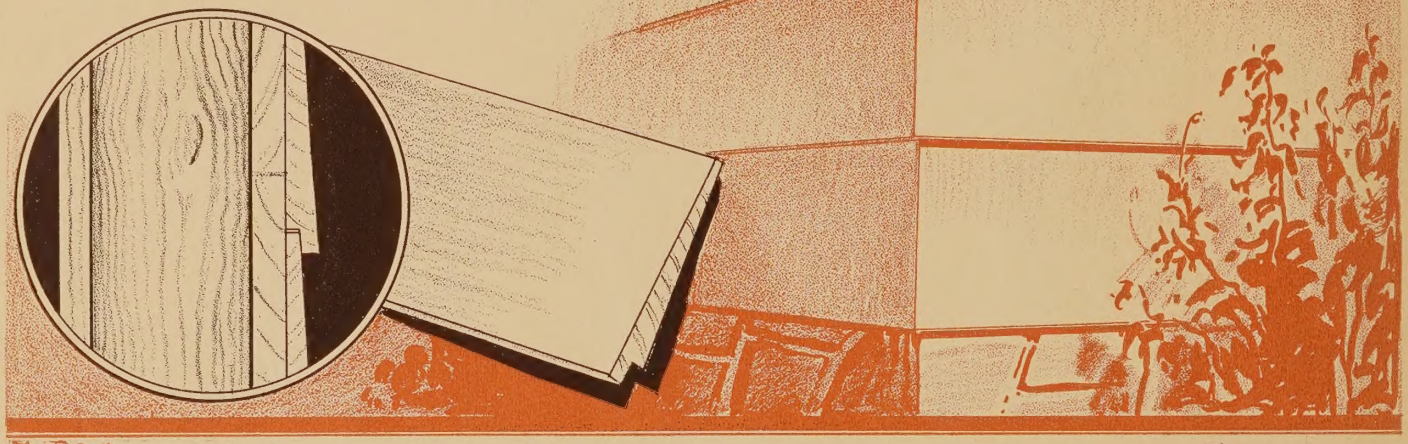


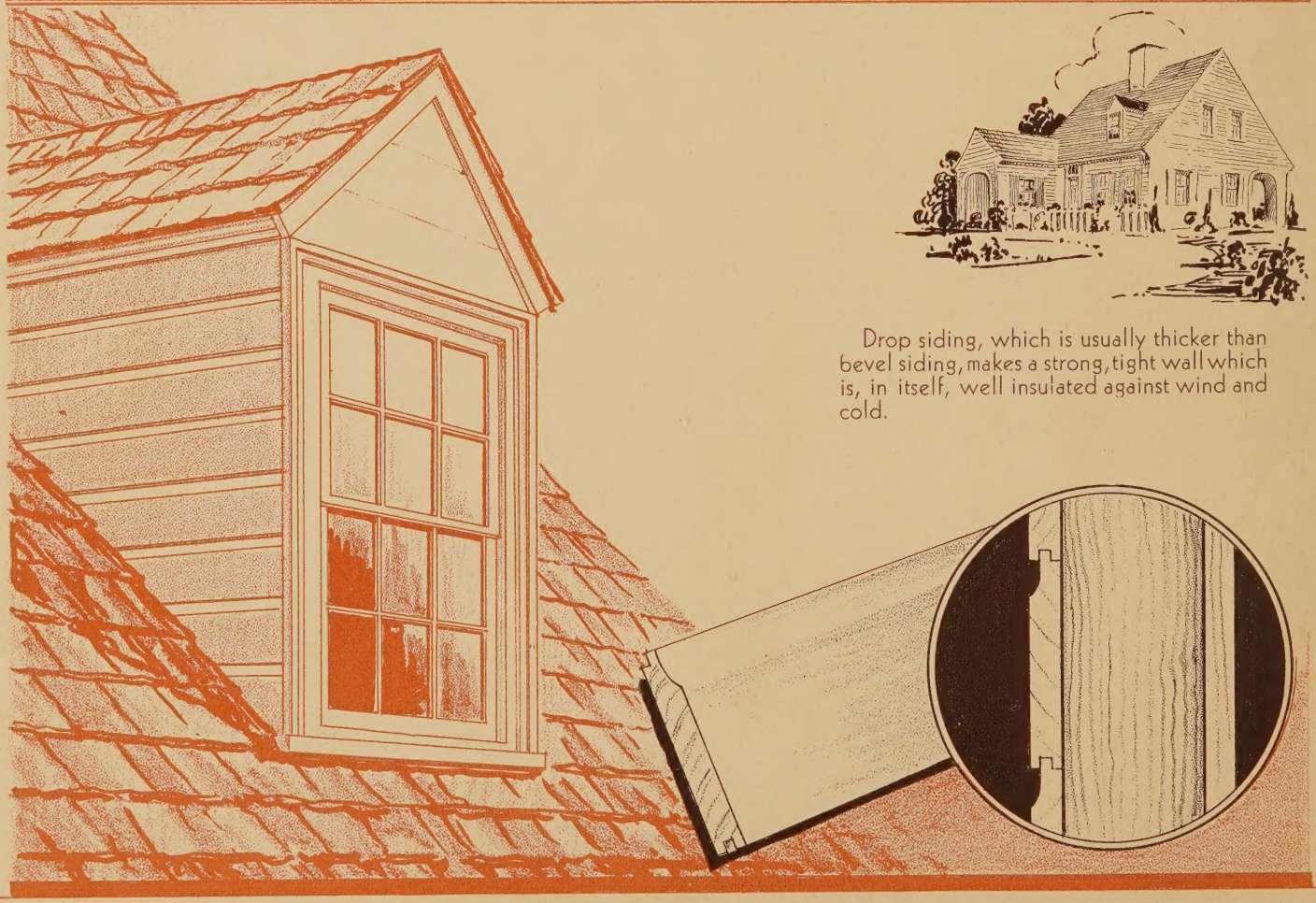
The modern shingle is today's adaptation of the hand-split shake frequently used for siding on the early New England cottage. Today's shingles do a better job without loss of charm.



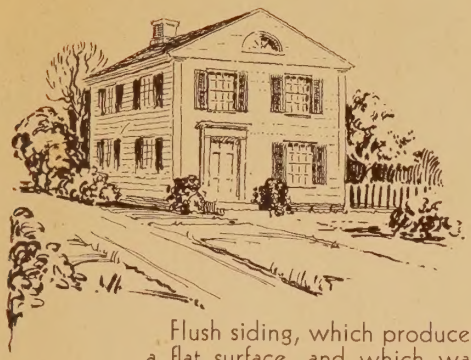


Wide Colonial shiplap is a popular and economical siding pattern which fits tight against the wall sheathing. Its use produces a simple, straightforward wall pattern.

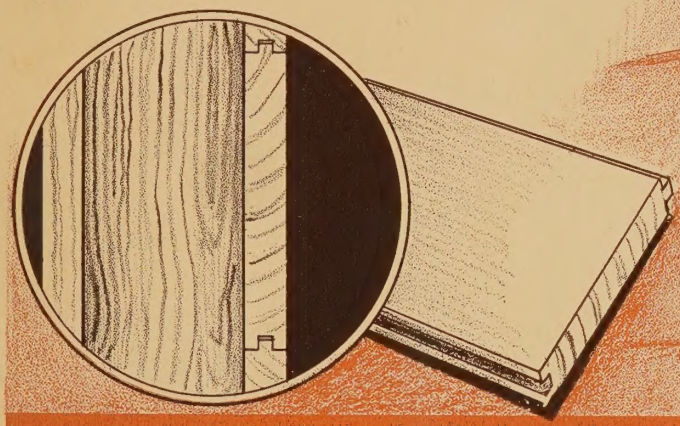




Drop siding, which is usually thicker than bevel siding, makes a strong, tight wall which is, in itself, well insulated against wind and cold.

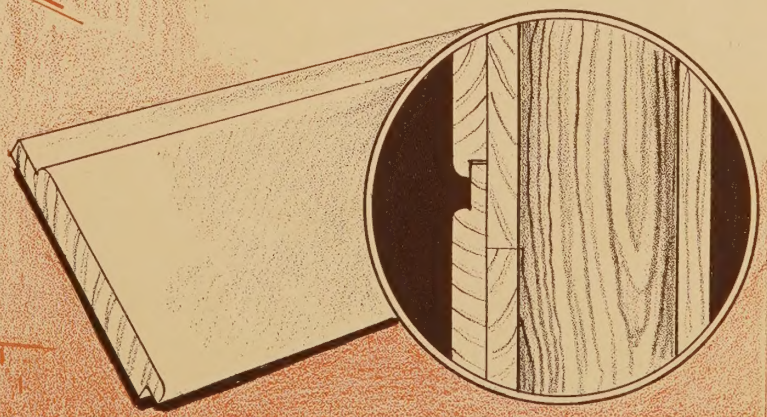


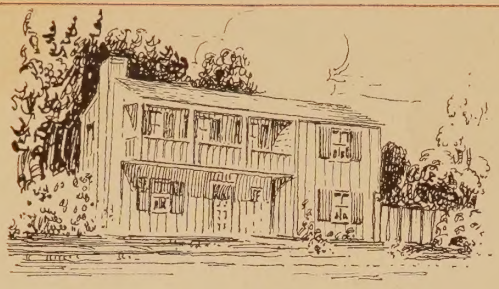
Flush siding, which produces a flat surface, and which was popular in the period of classic revival, is used to furnish a contrasting accent to patterned side walls.



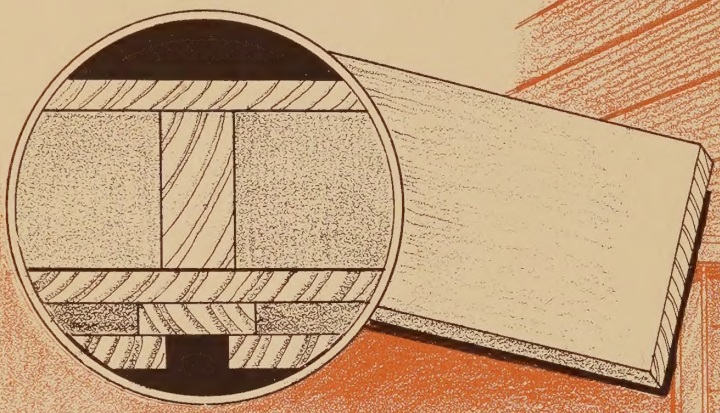
Formal, shiplapped siding is well adapted to formal architecture.

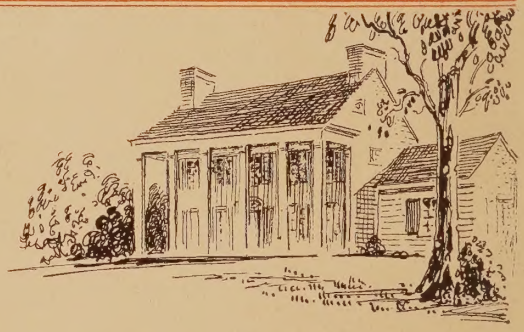
Decorative effects may be obtained by scoring the siding vertically with a grooving tool.



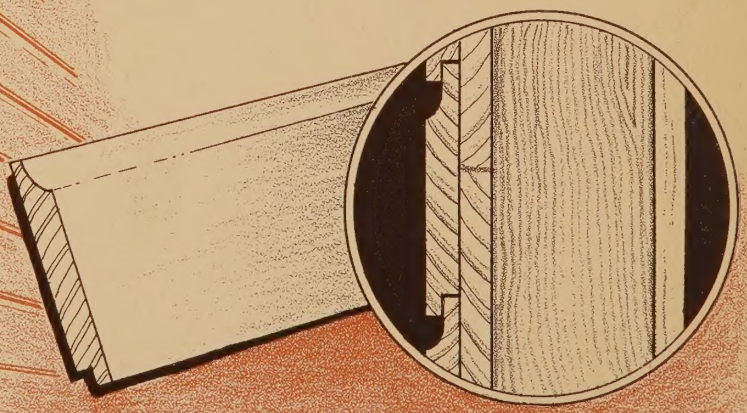


Vertical battens may be placed behind the joints of wide boards used as vertical siding. This system provides a double air space in the wall which improves its insulating value.



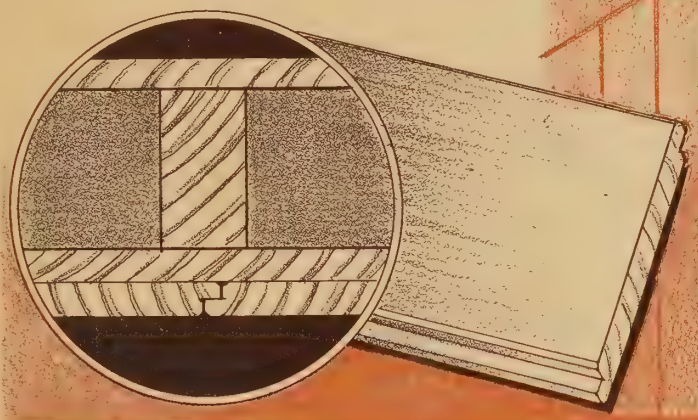


Rustic siding, a pattern of narrow boards with wide horizontal joints, is here applied to a Southern Colonial house . . . and the result will be a wall which will repel any storm.

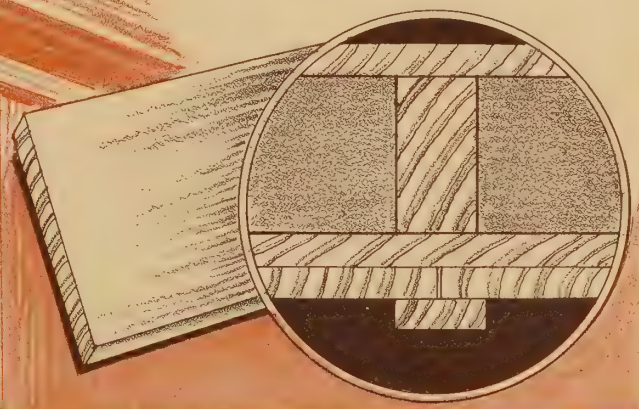


Quoined corners add interest to this wall of vertically applied V-grooved boards.

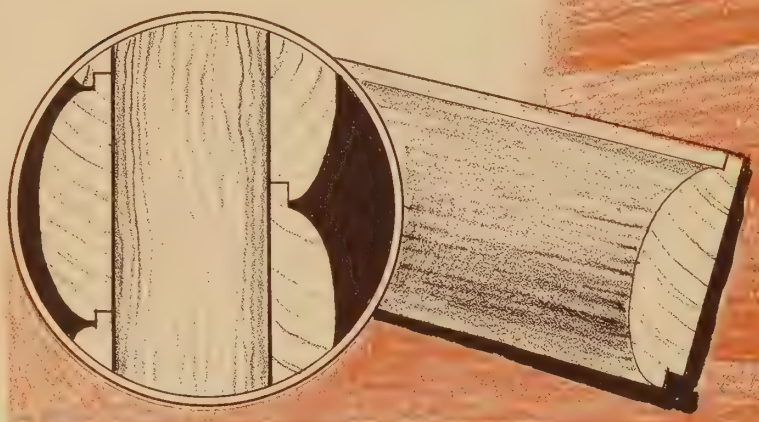
The quoins may be made by grooving extra wide corner boards horizontally.



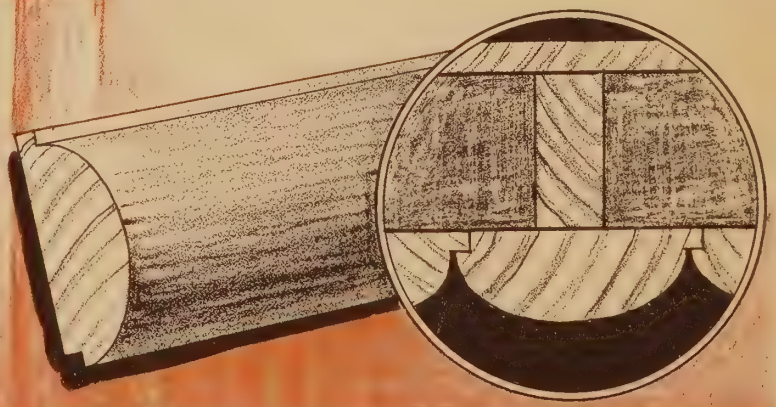
This combination of unmoulded vertical battens, grooved siding and shingles results in a rugged structural wall . . . appropriate for English and Norman type homes.

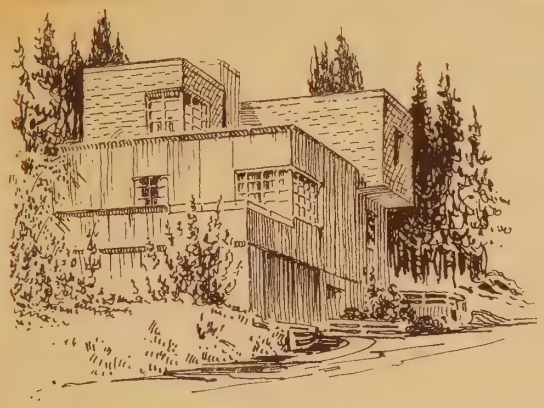


The use of log cabin siding produces the rustic effect of real log walls without attendant structural difficulties. Log siding may be applied to both inside and outside walls.

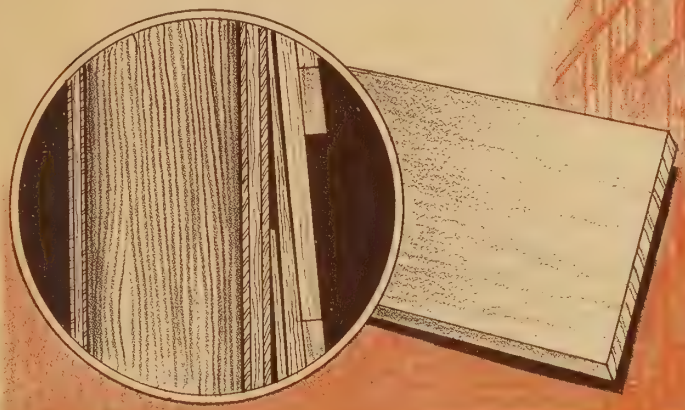


Log cabin siding laid vertically recalls vertical pole log houses. This type of siding provides an extra warm tight wall just as well suited to year-around as to summer dwellings.

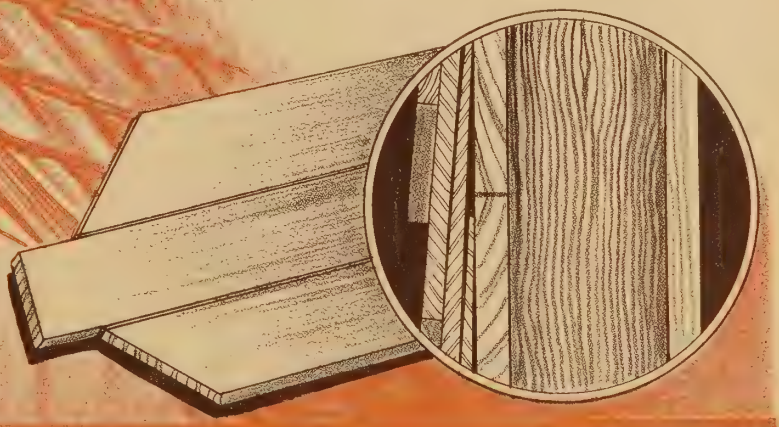




This unusual wall pattern, suited only to certain types of architecture, is made by spacing rhythmic breaks in two courses of stock shingles, alternating each course.



Many novel and interesting combinations for featuring certain wall areas can be made with shingles. In this case two cut shingles are used with each square shingle.

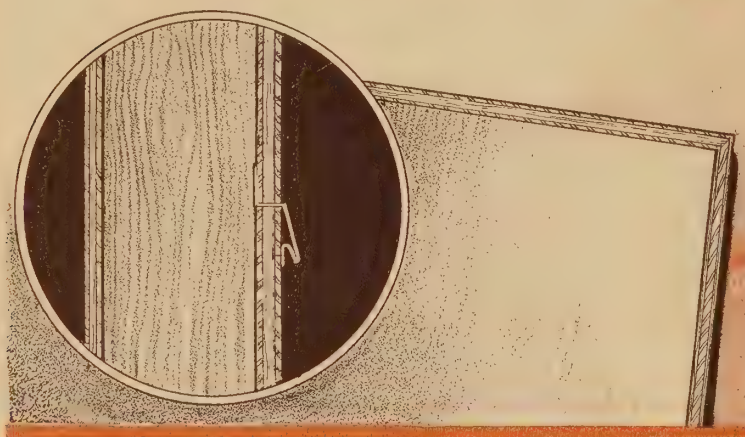


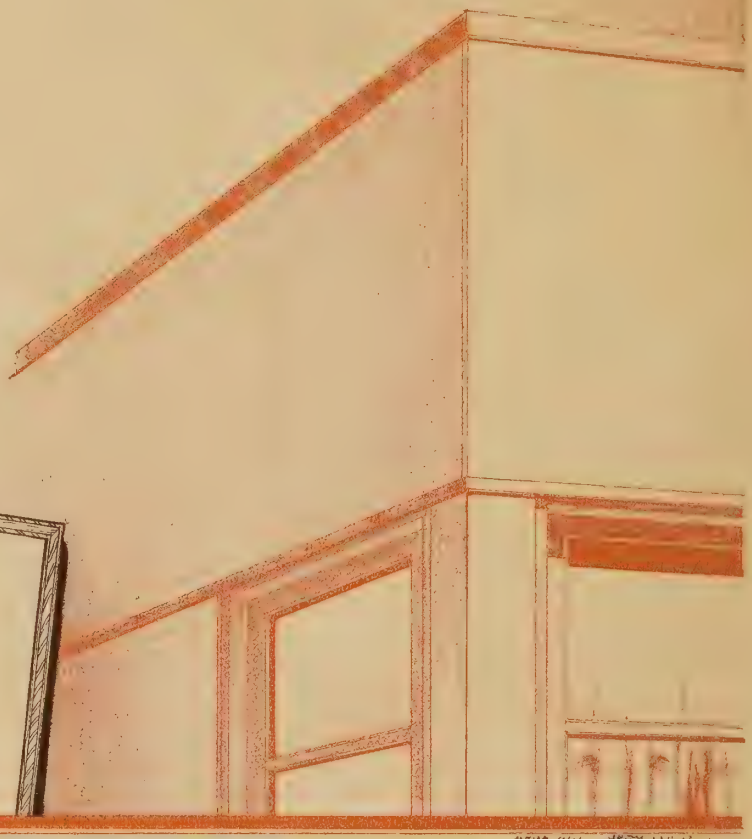
Living Examples of the Variety an

:: *and Builder with America's*

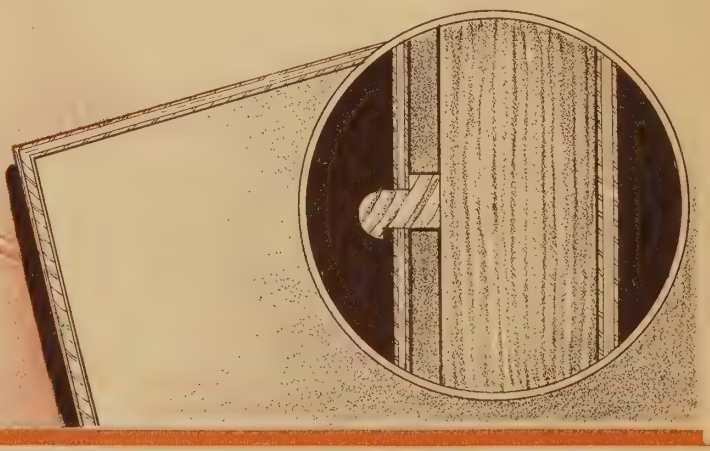
Charm Available to the Designer
ost Interesting Wall Material ::

Plywood is a good sheathing and siding material because of its strength, lightness and the ease with which it may be worked and applied. It may be painted or stained with equal facility. When used for siding, plywood should be made with waterproof glue.

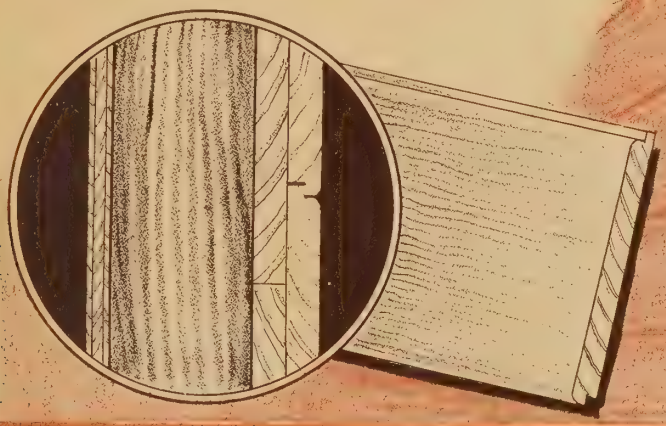




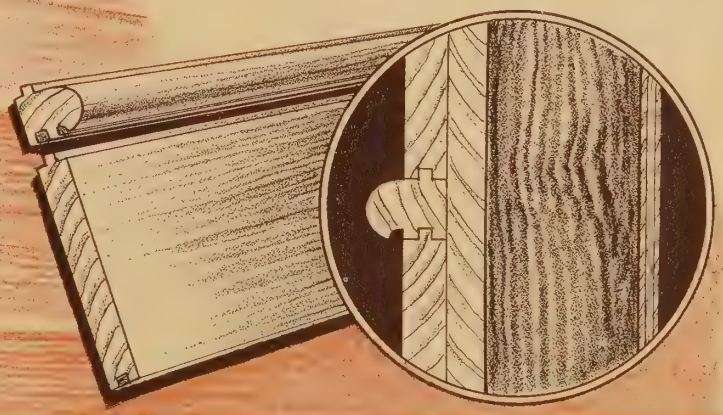
The large flat areas and curved surfaces of modern designs can be easily expressed with plywood . . . because of the wide range of sheet sizes it is possible to emphasize either vertical or horizontal lines.



Wide horizontal boards are also well suited to the modern home and particularly suit the long, low type of house The pattern here illustrated was used on the Lumber Industries exhibit house at "A Century of Progress."

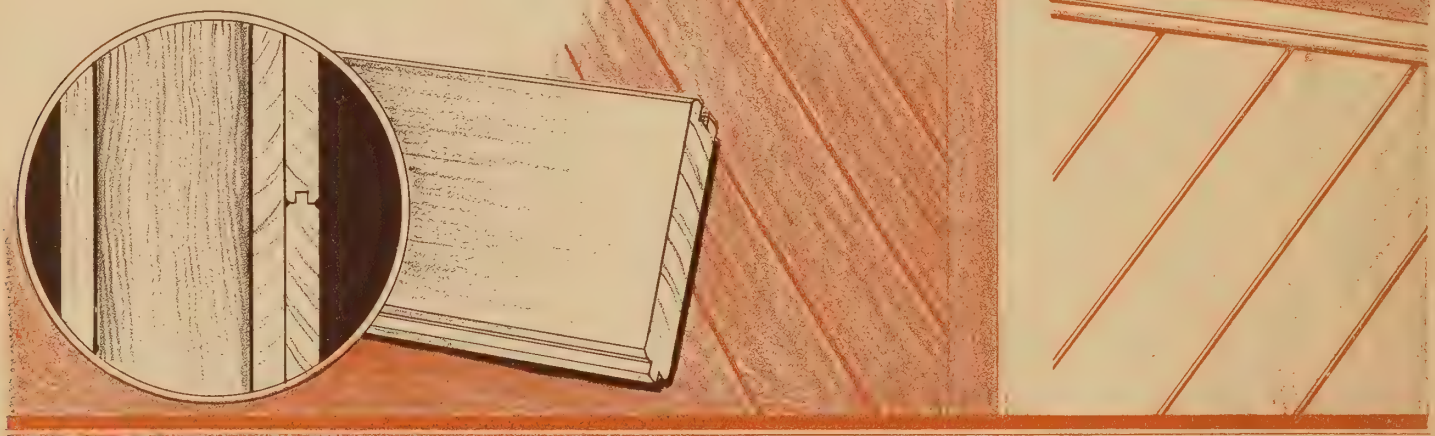


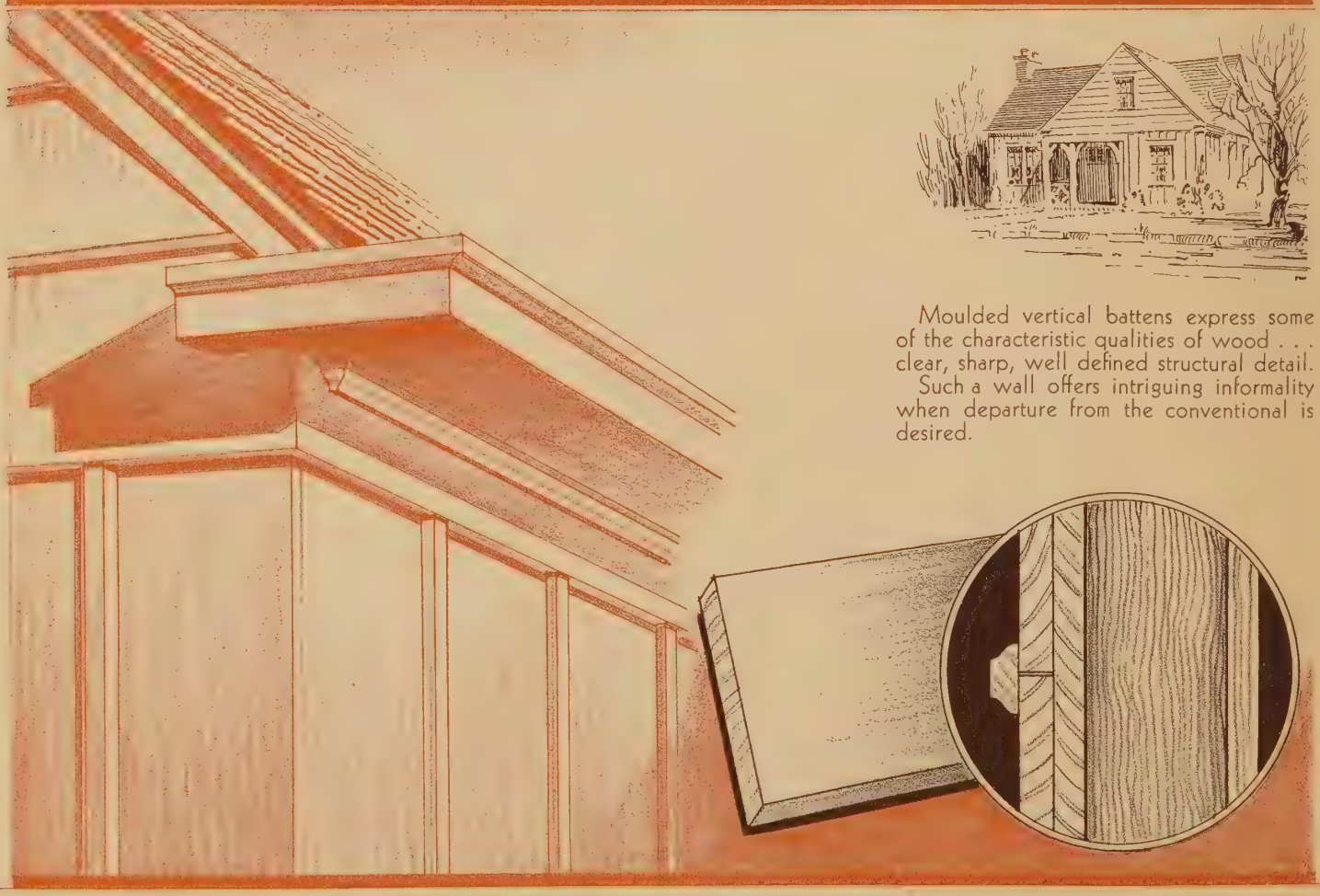
Horizontal tongue and grooved boards separated by a moulded insert offer extreme emphasis to horizontals needed to reduce the apparent height of a narrow house.



Diagonal tongued and grooved siding produces a novel effect suitable for small areas . . . and restrained use.

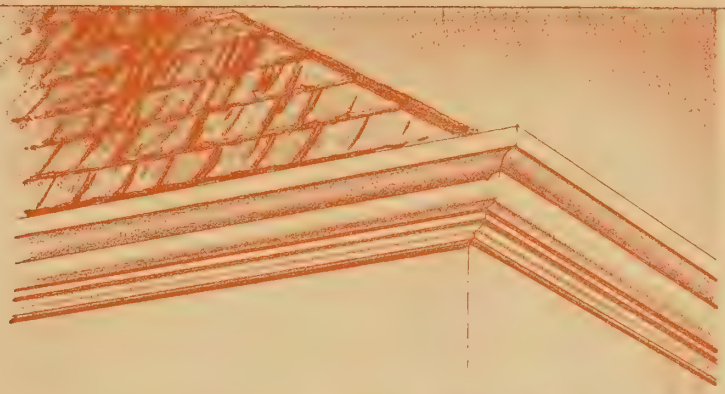
Here it adds texture interest to a small Dutch Colonial home.





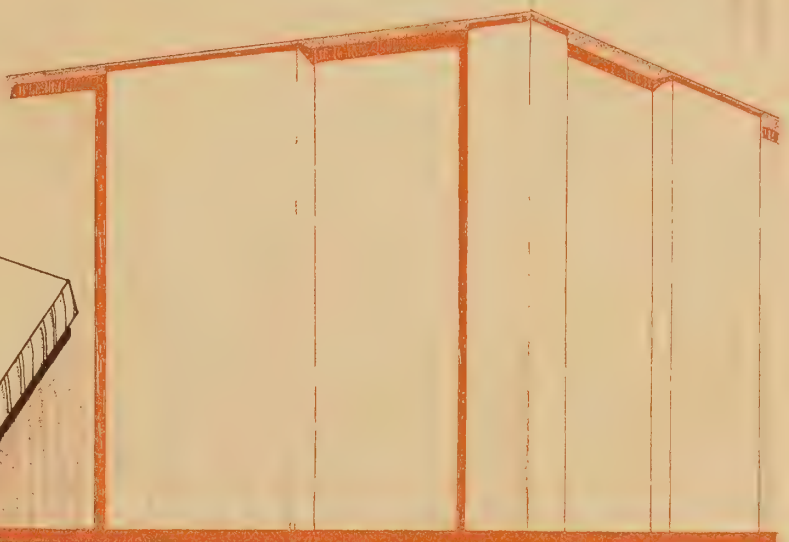
Moulded vertical battens express some of the characteristic qualities of wood . . . clear, sharp, well defined structural detail.

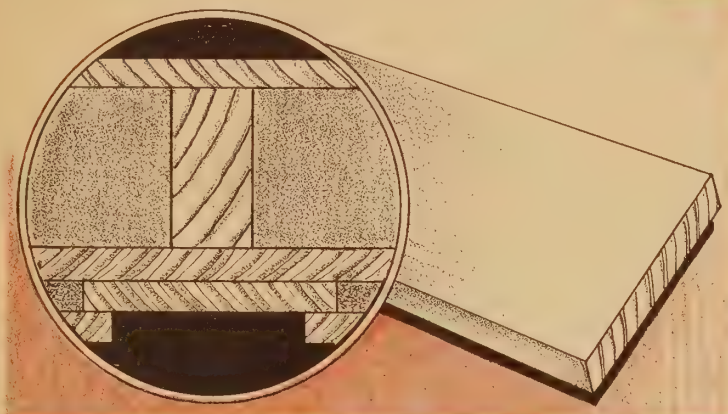
Such a wall offers intriguing informality when departure from the conventional is desired.



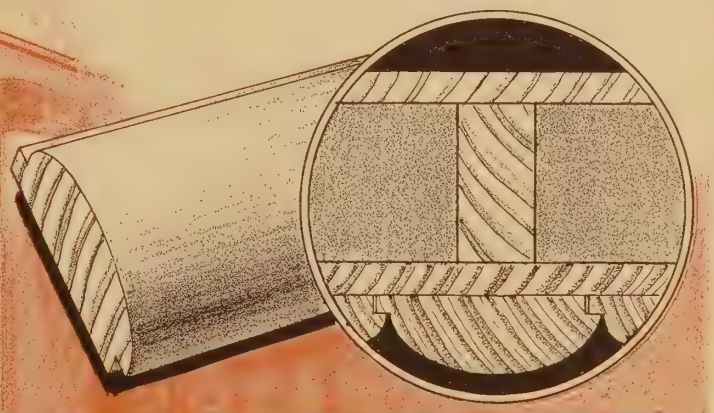
Wide unmoulded boards used as battens produce heavy vertical shadows and an exterior panel effect well suited to many modern designs.

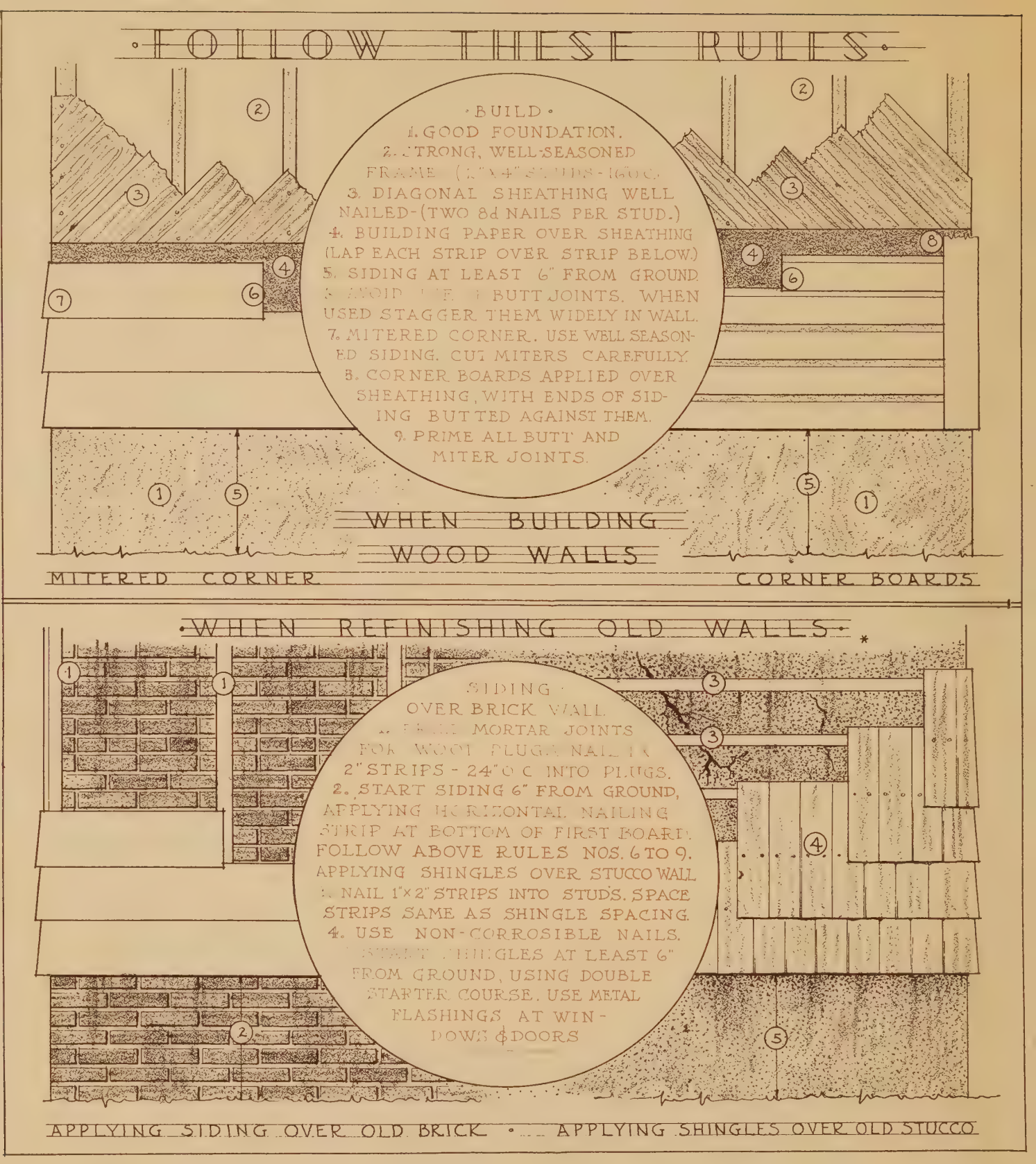
This type of wall is extra warm because of added air space.





Log cabin siding in combination with horizontal siding produces the modern counterpart of the early farm home constructed of logs and then partially covered with clapboards.





Wood siding saves 43 percent heat loss through the wall when applied as above to an old brick wall (8" brick, ½" plaster). Shingles save 32 percent heat loss through the wall when applied as above to an old frame wall (stucco on metal lath, 1" sheathing, 2"x4" studs, ¾" wood lath and plaster).

A tight siding wall will eliminate all water leakage due to driving storms. Siding or shingles may be applied if desired only over the one or two walls which are most exposed to the weather and therefore most subject to heat loss and water leakage. When this is done the pattern and finish of the wood wall should be carefully chosen to harmonize with and to improve the design of the house to which it is applied.

Unattractive walls may be easily and inexpensively modernized by applying wood siding or shingles.

How To Get The *Best* In Your Wood Wall

PATTERNS AND SIZES OF WOOD SIDING

The first wood siding was rough hand-sawed boards which were lapped over each other to shed the rain. Planing machines were unknown in those days, so shiplapped or tongued and grooved joints could not be made. Later these boards, known as clapboards, were sawed with one edge thicker than the other so that they would fit more snugly against the framing. The bevel siding so popular today is, except for refinements in manufacture, almost like the clapboards made nearly three hundred years ago.

Bevel or lap siding is customarily made in 4, 5, 6, 8, 10 and 12-inch widths. The 8-inch and wider bevel siding is often called bungalow or wide Colonial siding. It is economically manufactured by "resawing" dry square edged surfaced boards diagonally to produce two wedge shaped pieces. These pieces of siding are usually 3/16-inch thick on the thin edge and ½ to ¾-inch thick on the other edge, depending upon the width of the piece. This method of manufacture gives one planed face suitable for painting and a sawed face which may be stained for rustic effects.

Wide bevel siding often has shiplapped or rabbeted joints so that the siding lies flat against the studding instead of touching it only near the joints as ordinary bevel siding does. This reduces the apparent thickness of the siding by ¼-inch but permits the use of extra nails in wide siding and reduces the chance of warping. It is also economical, as the rabbeted joint requires less lumber than does the lap joint used with plain bevel siding. The rabbet should be deep enough so that where the siding is applied the width of the boards can be varied to meet window sill, head casing and eave lines as desired. Rabbeted joints are not so necessary in the 4 and 6-inch widths of bevel siding. These narrow widths of siding are usually but ½-inch thick, so rabbeting would make them too thin.

Rustic and drop siding are usually ¾-inch thick and 6 inches wide, and are machined in a wide variety of patterns, the most widely used of which are illustrated in Figure 1. Drop siding has tongued and grooved joints while rustic has shiplapped joints.

Drop siding is heavier, has more structural strength and because of its design has tighter joints than bevel siding, so is often used on garages and barns where there is no sheathing, as well as on homes.

The increasing popularity of the cottage types of architecture is bringing about the more common use of vertical siding, particularly in combination with other types of wood siding. Vertical siding consists of matched boards 10 or 12 inches wide or of random widths, the joints of which may be V-cut or covered with battens. Battens may be placed over every other joint alternating with moulded or flush joints according to the effect desired. Often the vertical siding is run up to the eave line, and shingles or bevel siding are used in the gables. (See pages 8, 9, 16 and 17 for illustrations of vertical siding.)

Various types of unusual sidings are made to secure special rustic effects. One of the commonest of these is a thick siding made to give the appearance of logs. There are several patterns of it to resemble logs of different sizes, and the chinking which goes between the logs. Such special sidings are used principally on summer homes, of course. Log cabin siding, used alone or in combination with other material, and painted rather than stained, may be very satisfactory in the expression of an ultra-modern effect. Its use in this connection is not limited to exteriors. (See page 10.)

Wood shingles and shakes are often used for siding as well as roofing materials. Shingles are usually 16, 18 or 24 inches long, ⅜ or ½-inch thick at one end, and 1/16-inch at the other. In addition to the types of shingles regularly stocked it is possible to secure shingles of special thicknesses, lengths, and shapes.

Shakes, either split or taper sawed, usually 24" or more in length, with thick butts make possible widely spaced, heavy horizontal shadow lines with interesting texture between.

SIDING SIZES AND ESTIMATING QUANTITIES

The nominal sizes which are used in computing the footage of lumber are based upon the rough green sizes of boards which are cut from the logs. These rough green boards shrink somewhat in width and thickness as they dry, and their size is further reduced by machining to pattern. The following table is an extract from the American Lumber Standards giving the nominal and finished sizes for siding to which, with minor variations, most siding is produced. It will serve as a sufficiently accurate guide for the design of exterior wall surfaces.

The thicknesses apply to all widths and the widths to all thicknesses except as modified[1]

Siding	Size, board measure		Dressed dimensions	
	Thickness	Width	Standard thickness	Standard face width
	Inches	Inches	Inches	Inches
Bevel	....	4	[2]7/16 by 3/16	3 1/2
	.	5	10/16 by 3/16	4 1/2
		6	.....	5 1/2
Wide beveled	....	8	[2]7/16 by 3/16	7 1/4
	.	10	9/16 by 3/16	9 1/4
	.	12	11/16 by 3/16	11 1/4
Rustic and drop (shiplapped)	....	4	9/16	3 1/8
	....	5	3/4	4 1/8
		6	.....	5 1/16
	. .	8	.....	6 7/8
Rustic and drop (dressed and matched)	....	4	9/16	3 1/4
	...	5	3/4	4 1/4
		6	.....	5 3/16
	....	8	.....	7

[1]In patterned siding, 11/16, 3/4, 1, 1 1/4, and 1 1/2 inches thick, board measure, the tongue shall be 1/4 inch wide in tongued-and-grooved lumber, and the lap 3/8 inch wide in shiplapped lumber, with the over-all widths 1/4 inch and 3/8 inch wider, respectively, than the face widths shown above.

[2]Minimum thicknesses.

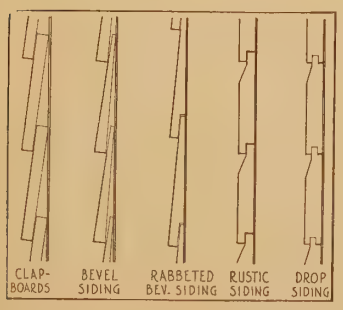
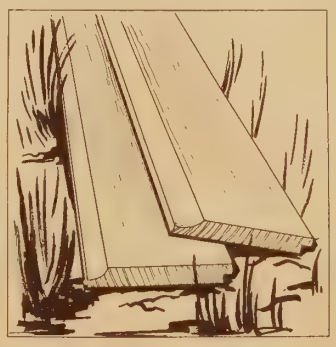


FIGURE 1

At the left is a thumb nail comparison of the end view of the five most popular types of siding in place. It illustrates the slight difference between drop siding and rustic siding and makes possible quick comparison of the most popular siding patterns.

FIGURE 2

It is uneconomic to buy good material and store it where it can absorb moisture and deteriorate even before it arrives at its proper place in the building. Well seasoned lumber should not be stored in the open without protection nor on wet ground.



In figuring the quantity of siding required for a home it is necessary to increase the square foot area of the walls, omitting openings, by enough to compensate for the machining of joints shiplapped or dressed and matched and the overlap of bevel siding. The following allowances are approximately those usually made:

Bevel siding	1x4 with	¾	lap	Add 45%
	*1x5	⅞	lap	38
	1x6	1″	lap	33
	1x8	1–¼″	lap	33
	1x10	1–½″	lap	29
	1x12	1–½″	lap	23
Rustic & drop siding (shiplapped)	1x4	Add 28%		
	*1x5	21		
	1x6	19		
	1x8	16		
Rustic & drop siding (dressed & matched)	1x4	23		
	*1x5	18		
	1x6	16		
	1x8	14		

*Unusual sizes.

An additional 3 to 5 percent should be allowed for cutting and fitting around openings and under the eaves.

SPECIES AND GRADES

Siding is graded under rules adopted by the regional associations of lumber manufacturers. The lumber dealer can readily advise the interested siding user concerning the grades and species available locally. A wide selection of siding suitable for any purpose can be readily purchased from the lumber dealer.

SHINGLE GRADES

Shingles are usually separated into three grades. Generally speaking, the first grade is composed of clear shingles. The second grade consists of shingles with clear butts and admits defects in that portion of the shingle which will normally be covered in use. Third grade shingles are those which have defects other than permitted in the second grade.

Most shingles are made in random widths, varying in the No. 1 grade from 3″ to 14″ with only a small proportion of the narrow width permitted. Shingles of a uniform width known as dimension shingles are also obtainable. The latter are cut uniformly to widths of 4″, 5″ or 6″, as may be specified. For side wall maximum exposure to the weather recommended for 16″ shingles is 7½″, for 18″ shingles 8½″ and for 24″ shingles 11½″. Shingles on side walls are frequently laid in what is called "double-coursing." This is done by using a lower grade shingle under the shingle exposed to the weather. The exposed shingle butt extends about ½″ below the butt of the under course. When butt nailing is used a greater weather exposure is possible, frequently as much as 12″ for 16″ shingles, 14″ for 18″ shingles and 16″ for 24″ shingles.

Shingles should be applied with nails that are not likely to rust or corrode. At least ¼″ space should be allowed between shingles and it is frequently recommended that no shingle over 8″ wide should be laid. Shingles wider than this should be split.

The use of corner boards or a mitered corner is optional . . . either will work well if carefully made. Corner boards are older, but still necessary to some architectural types.

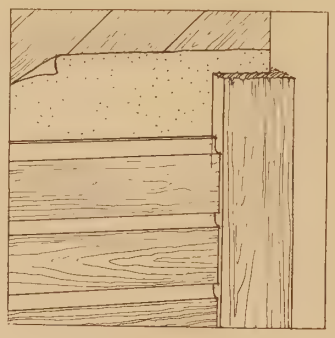


FIGURE 3

This is the right way to install a corner board. They should always rest on the sheathing itself and be separated from it only by building paper. The ends of siding butting into corner boards should of course be painted.

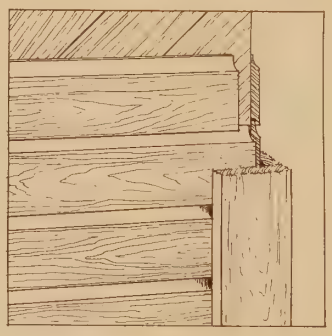


FIGURE 4

This is the WRONG way to install a corner board. It is perfectly evident that the little pockets caused by the moulded top of the siding running under corner boards permits the storage of water.

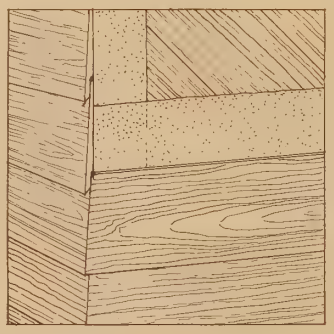


FIGURE 5

Unless well jointed, mitered corners will eventually admit water and cause trouble. Tight, careful miters, well cut for a perfect fit and jointed with paint is an essential requirement of a good siding job.

APPLICATION OF THE SIDING

Siding is kiln or air dried to the necessary low moisture content by the manufacturer and delivered in that condition by the retail lumber dealer. It should be carefully protected from moisture after it is delivered to the job until the carpenters are ready to lay it. The lumber sheathed frame which is to receive it should also be dry. Then the siding will stay put just as it is laid and will not shrink, warp or split.

Siding Width	Minimum Lap for Beveled Siding
4″	¾″
5″	⅞″
6″	1″
8″	1¼″
10″ and wider	1½″

This spacing may be varied so that siding joints coincide with the bottoms of window sills and the tops of drip caps at window and door heads. One method is to begin at the bottom with a wider lap than indicated in the table and decrease the lap slightly as each succeeding board is applied. The result is a graduated spacing.

The joints in adjacent courses of siding should be staggered as widely as possible. Sometimes on high grade work splice joints are made with a miter saw but usually square cut butt joints are used. The corners should be mitered unless there is a vertical piece of trim at the corner against which the ends of the siding are butted.

Plain mitered corners, if they are to look well, must fit closely and stay in place. Open miters are nearly always the result of using siding lumber which has not been properly seasoned or which has been exposed to rain after delivery to the job, so their prevention is easy. An added advantage is to paint the ends of the siding as the siding is laid, to prevent the absorption of moisture. (See Figure 6.) This is recommended for corners and also for points where siding meets window and door frames.

Corner boards, which are commonly used with drop siding, should lie flat against the building paper with the siding butting up to them. The practice of nailing corner boards on over the siding is a poor one, as it allows water to run in behind the corner boards and into the ends of the siding. (See Figures 3 and 4.)

NAILING

Nails cost little compared with the cost of siding or shingles and labor but the use of good nails is important. It is poor economy to buy siding which will last for many generations and then fasten it to the sheathing with nails which will rust badly within a few years. Rusty nails, even though they do not rust in two, stain the paint. Copper nails or zinc coated nails will hold the siding permanently and will not streak light colored paint surfaces. Their slight added cost is a good investment.

Sometimes siding is applied with finishing nails and the nail holes puttied before painting, but regular siding nails hold better and if rust resistant are not conspicuous. For ½-inch bevel siding 6d nails are used and 8d nails for ¾-inch siding. Ordinary shingles are put on with 3d nails and

extra thick shingles and shakes, depending upon their thickness, with larger nails.

PAINTING AND MAINTENANCE

Long exposure to the elements will cause the deterioration of any building material but some materials will, if properly used, last for many generations. Properly applied and protected wood siding is one of the longest lived materials with which walls can be covered.

When wood siding deteriorates it is from but two causes; decay or rot and weathering, neither of which need occur if simple precautions are taken. Decay is the disintegration of wood caused by the growth of fungi. These fungi grow in wood only when the moisture content is higher than that of properly seasoned lumber. If the home is built upon a foundation which has been carried well above the ground and the construction is such that water runs off instead of into the walls, decay will never give trouble. It is when the flashings or drip caps above windows are omitted and the window sills do not drain properly that water seeps in behind the siding and may cause decay even though the home may be well painted.

Weathering is the separation of wood fibers on the surface of a board caused by the alternate shrinking and swelling of the surface when it is dry or wet. Painting keeps the moisture content of this surface layer from changing rapidly and so prevents weathering. It is for this purpose, and to improve the appearance of a building, that paint is used.

All of the woods commonly used for siding are painted successfully where paint materials of good quality are properly applied.

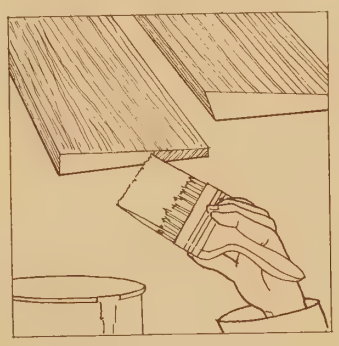
The priming coat should be put on as soon as possible after the siding has been applied to prevent rapid changes in the moisture content of the surface of the siding. If an unexpected rain should wet the unprimed wood, the first coat of paint should not be applied until all the water has re-evaporated from the siding.

Paint usually fails most rapidly over knots, so if the common grades of siding are used the knots should be given some special treatment before the priming coat is put on. A good treatment is a thin coat of aluminum primer which is allowed to dry firmly before the priming coat is applied. To secure the most durable and satisfactory paint job use pure white lead in oil or the highest grade of mixed paint, selecting a brand sold by a reliable dealer.

There are certain fundamentals of common sense good construction which should be observed for permanence of both building decorations and painting.

There are a number of faults against which simple precautions should be taken in order to realize the maximum benefits from good lumber and good paint.

1. Improper protection of lumber after delivery to the building site and before it is used; allowing siding to lie directly on the ground and to be rained or snowed on will naturally cause it to absorb moisture. Siding should always be protected from the weather and kept dry.
2. Painting too soon after a rain.
3. Closing up a newly plastered house and heating it to dry the plaster. The moisture from the plaster is vaporized and, in cold weather, condenses on the inside of the siding since it cannot escape. More ventilation and slower drying of plaster will correct this condition.
4. Faulty construction, particularly inadequate flashings and drip caps, which allows water to run in behind the siding.
5. Damp basements, siding carried too close to the ground, and poor ventilation under porches or other parts of homes under which basements do not extend.



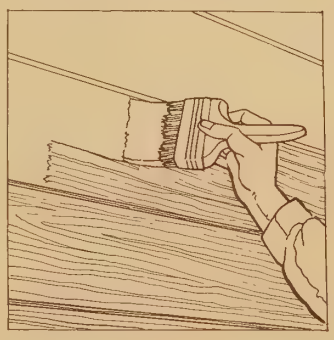


FIGURE 6

Protect your siding on the ends as well as surface . . . paint butt joints when siding is being put in place.

Paint the surface of the siding as soon as it is in position . . . don't allow moisture to get a foothold.

All of the above sources of excessive moisture can easily be avoided. The observance of suitable precautions should be considered a part of good construction practice, regardless of the siding material used. Neglect means trouble with other materials just as often as it does with wood siding, so good construction practices are always worthwhile.

BUILD "DRY" AND SAVE TROUBLE

Hundreds of gallons of water are introduced into a building during plastering operations. Following the completion of a newly plastered home there is a period of so-called "drying out." This continues until the general moisture content of the structure is reduced to a more or less static dry state at which it will remain, subject to the minor fluctuations of the seasons, during the life of the building.

Built of good materials the average house is not particularly damp until the entire structure is soaked under a blanket of wet plaster. Most lumber delivered by a good lumber dealer to a building site is already dry . . . the result of kiln or air drying. Moisture from the wet plaster is absorbed in part by the dry wood. Time should be given for the wood to re-dry and for the plaster to become thoroughly dry before final woodwork in the form of finish, flooring, trim, cabinets and other items usually kiln dried are installed in the building. Poorly fitting mitres, open floor joints, cracks and similar unsightly conditions which detract from the beauty of an otherwise perfect home usually result from too much moisture in the building at the time of installation. Wood will not shrink unless it is subject to a marked variation in moisture content. When thoroughly dry wood is applied to wet plaster it absorbs some moisture with consequent swelling and then shrinkage occurs as the wood changes back from a wet to a dry condition.

Most of the unsightly defects resulting from the plaster-introduced moisture can be eliminated entirely if the house can be built "dry" without the trouble-making water which goes with plastering.

Exterior painting difficulties previously mentioned as resulting from water in plaster being driven out through the exterior walls can be entirely eliminated if a "dry" finish is used instead of wet plaster.

USE ALL-WOOD INTERIORS

All-wood interiors composed of the various types of wood paneled walls in both sawn material and in the plywood-veneer group are an excellent "dry" interior wall finish, and a welcome relief from plaster. The many new forms of wood, specifically developed for interior work, make the job of producing an all-wood interior of any period an easy one. The result is a dry home from the very beginning, with none of the blemishes which mark the average new home at the end of its first heating season.

Many illustrative suggestions for all-wood, "dry-built" interiors are available through the lumber associations listed on the inside back cover of this booklet. A letter to any of these associations or to the National Lumber Manufacturers Association will bring helpful information for the planners of new homes.

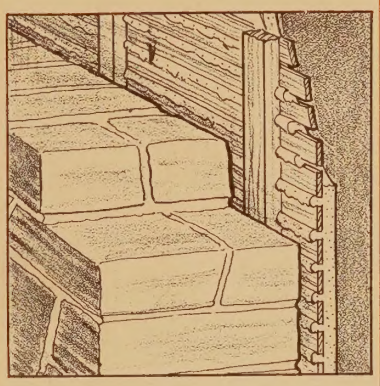
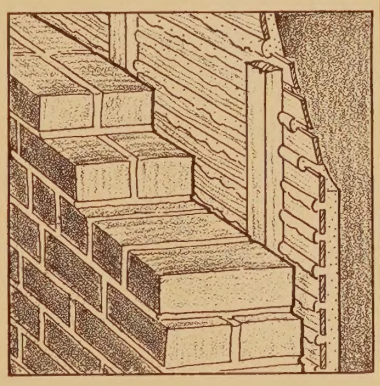
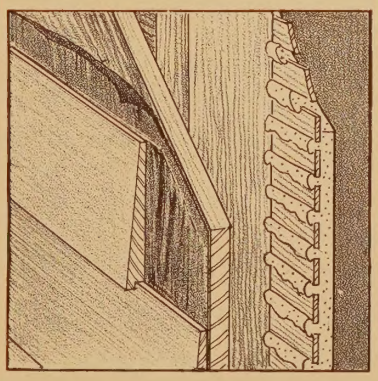
WHAT WILL IT COST?

How Can I Get the Most House for My Money

A RESPONSIBLE CONTRACTOR SUBMITTED THE COST ESTIMATES SHOWN HERE FROM WORKING DRAWINGS OF THIS HOUSE PREPARED BY ROYAL BARRY WILLS. PRICES ARE BASED ON MATERIAL AND WORKMANSHIP OF GOOD QUALITY.

This House not only Costs Less in First Costs, But also in other Important Factors constituting the Cost of a House

SOME SIMPLE ARITHMETIC ON THE COST OF BUILDING AND LIVING IN VARIOUS TYPES OF RESIDENCES - - -

DES-CRIPTION OF WALLS	TYPES OF WALLS USED IN ESTIMATING COST OF HOUSES ON PAGE 22	HEAT LOSS FACTORS
8" STONE 3/4" Furred Air Space Wood Lath and Plaster Cost **49c** Per Square Foot More Than Wood		Yearly Cost of Heat Loss Through Walls Of Stone House **$100.71** Heat Loss Index **.37***
8" BRICK 3/4" Furred Air Space Wood Lath and Plaster Cost **31c** Per Square Foot More Than Wood		Yearly Cost of Heat Loss Through Walls Of Brick House **$81.66** Heat Loss Index **.30***
WOOD SIDING Building Paper Wood Sheathing 2x4 Studs Wood Lath and Plaster		Yearly Cost of Heat Loss Through Walls Of Wood House **$68.05** Heat Loss Index **.25***

How do exterior walls built of three common residence materials affect the cost of building and living in a home?

There are seven factors necessary to put together the complete picture, from a dollars and cents standpoint, of the total cost of a house which includes not only its first cost, but also the expense of living in it over a period of years. These factors are:

1. FIRST COST
2. ANNUAL INTEREST COST
3. ANNUAL HEATING COST
4. TAXES
5. MAINTENANCE
6. INSURANCE
7. DEPRECIATION

Let us investigate each one of these factors with reference to the house on page 22 built with three exterior wall materials . . . STONE . . . BRICK . . . AND WOOD.

FIRST COST

The first important factor is the possible saving in **first cost.** A reliable contractor estimated the cost of the home shown on the opposite page with the same exterior dimension using three types of wall construction illustrated at the left and based on Washington, D. C. prices early in 1937.

The results show the use of a wood wall in this particular house saved $814.00 compared with a stone-walled, and $513.00 compared with a brick-walled house. If the design had been such that more wall and less roof was used for enclosure the difference would have been even greater and would have increased the cost advantage of the wood frame house.

An important consideration in the first cost of the house is that, exterior dimensions being the same, the wood-walled home has larger rooms than either the stone or brick houses because the walls are approximately four and one-half inches thinner than the masonry walls.

In the case of the example home the wood walls add about fifty-five square feet or 3.5 percent to the floor area of the first and second floors. The same house for less money or more house for the same money.

ANNUAL INTEREST COST

A second factor is the annual interest on the money saved in the first cost. The wood-walled house, costing less, results in a saving in annual interest of $48.84 compared with the stone and $30.78 compared with the brick. This is a direct reduction in the expense of living in a home, a reduction in the amount the owner has to pay out each year.

* Heat loss coefficient expressed in B. T. U. per hour, per square foot, per degree difference between inside and outside air temperature.

ANNUAL HEATING COST

A third important factor is the money spent each year for fuel. Some materials are better natural insulators than others—wood stands high in this respect—and as the walls represent a large proportion of the area through which heat can be lost, their construction has an important bearing on annual costs.

The cost of compensating for fuel burned for the heat loss through the sidewalls of the houses illustrated on page 22 is lowest for the wood wall which shows an annual heat loss cost of $32.66 less than the stone and $13.61 less than the brick.

The costs are based on the maintenance of a temperature of 60 degrees during seven sleeping hours, and 70 degrees during the remaining hours of the day and the assumption there will be in the average northern heating season a 163,000 hour-degree temperature difference, with insulation properties based on the heat loss data from the Guide of the American Society of Heating and Ventilating Engineers.

The calculations are also based on the use of coal at $12.00 per ton for coal of 12,000 B.T.U. per pound, a radiator emission of 150 B.T.U. per hour, and fifty percent over all efficiency.

COST OF PROPERTY TAX

A fourth factor is represented by the inevitable property tax. With a given tax rate the higher the cost of a dwelling the larger the taxes paid. Based on a tax rate of $1.46 per $100 of building cost, the annual taxes on the house with the wood wall are $11.89 less than the stone, and $7.49 less than the brick.

MAINTENANCE

Annual maintenance expense is another item which must be charged to the cost of living in a home. Some people have the impression that by paying the higher first cost for a masonry wall they are saving money because of the reduced amount of painting required.

While the sides of stone and brick houses are frequently left unpainted this does not mean there is no annual painting cost on that type of home. The windows, shutters, doors, cornice and porch parts, which are the most time-consuming from a painting standpoint, must still be painted as in the case of the all-wood house.

Without considering the expense of maintaining masonry walls through cleaning, repointing, or painting and allowing a generous margin by assuming the flat unpainted wall surfaces of stone or brick houses mean a saving of 2/3 the annual painting cost, what is the result?

Allowing $130 for a two-coat paint job on the wood house every three years (oftener than most houses need be painted) means an expense of $43.33 per year. If the minimum amount of painting of the other two houses is 1/3 of this, it represents an expenditure of $14.44 per year. This is the first factor in which the annual expense involved in the frame house exceeds that of the masonry houses. It amounts on the basis of the foregoing figures to $28.89 per year.

INSURANCE

Fire insurance cost is frequently advanced as an exaggerated argument for various types of materials. It is an insignificant factor however. While the **rate** per $100 of insurance coverage may be slightly less for the building with the brick and stone walls, the total risk requiring coverage is also greater; which means the annual premium is almost as much as for the wood house. For the three houses illustrated, assuming the mortgage on each house will be the full 80 percent permitted by the FHA with the full amount of the loan to be covered by insurance, the policy for the stone house must be for $6787 and the premium at the rate for the location for which it was estimated would amount to $11.33 per year. The policy for the brick house would be for $6546 with a $10.93 annual premium; for the frame house policy would be $6136 with an annual premium of $13.81. This shows the annual premium for the frame house is $2.48 a year more than the stone and $2.88 a year more than the brick.

DEPRECIATION

Annual depreciation is another intangible expense which is frequently exaggerated out of proportion to its real significance. Obsolescence is primarily a question of changing neighborhoods or adaptability of the structure to new use requirements. In this respect the frame building frequently has the advantage.

Ease in modernizing, in accommodating new equipment, the new conveniences for living, reconditioning or restyling in wood houses is easier and can usually be accomplished at lower cost than with other types.

From the standpoint of structural depreciation a well built and properly maintained home of good building materials, will last as a usable physical unit for many generations. Loss of value in a house which has been well cared for is usually due to factors other than physical deterioration. The desirability of a property depends not so much upon age as it depends upon location, attractive design, and adaptability to existing modes of living.

Most any building of ordinary quality would stand for centuries if ordinary repairs and replacements were made as needed. Evidence of this fact exists through New England and all the original 13 Colonies where many of the 150 year old and older wood frame houses look as well as the newest house in town. Consider Mount Vernon which today stands almost as it did in the days of Washington.

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